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ABSTRACT

Three experimental psychological tests were investigated to determine if they added significantly to the prediction of eight drug abuse criteria when combined with a basic predictor set consisting of background variables only. Of the four tests investigated, only one, the Life Values Questionnaire appeared to add any significant unique variance to prediction when combined with the background variables. In addition, the inclusion of the LVQ with this basic predictor set resulted in significant multiple validities for all the criterion variables except Heroin, Barbiturate and Miscellaneous Abuse. Even though the LVQ does not by itself yield high validities for any of the eight drug abuse criteria, it does have considerable success in discriminating between drug abusers and nonabusers. (Author)

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AIR FORCE HUMAN RESOURCES LABORATORY

AFHRL-TR-74-60

PREDICTION OF DRUG ABUSE BY THE LIFE VALUES QUESTIONNAIRE

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August 1974

Interim Report for Period May 1973 – February 1974

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Three experimental psychological tests were investigated to determine if they contributed significantly to the prediction of seven drug abuse criteria when combined with available demographic and aptitude variables. The results indicate that only one of these tests, the Life Values Questionnaire, adds significantly to prediction. Although the validities yielded by the Life Values Questionnaire for the criteria are not high, it appears that its predictive variance is fairly unique.

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PREFACE

The work reported in this study was accomplished under Project 7719, Air Force Personnel System Development on Selection, Assignment, Evaluation, Quality Control, Retention, Promotion, and Utilization; Task 771913, Research on the Impact of Socio-political Changes on Personnel Management Devices and Systems.

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PREDICTION OF DRUG ABUSE BY THE LIFE VALUES QUESTIONNAIRE

I. INTRODUCTION

Only a minor portion of drug abuse research has been devoted to either developing or identifying psychological instruments for predicting the use of illicit drugs. Progress in this area has been hindered by both the inaccessibility of a large, broadly-based sample of drug abusers and the complexity of drug abuse criteria. For the most part, however, the results of available studies are limited either by the size or the narrowness of the samples on which they are based. A notable exception is Carney (1971) who based an investigation of the potential of risk-taking as a predictor of drug abuse on high school, college, and adult samples. Another commendable effort, based on a college sample, is the work of Blum (1970) who investigated the predictive potential of expressed willingness-to-take-drugs. The research reported in this paper is the first of a number of attempts by this organization to identify psychological tests which, individually or in combination, predict drug abuse criteria. Furthermore, for any such test to be maximally useful, it should add significantly to the prediction of appropriate criteria when combined with certain demographic and aptitude variables already routinely available.

II. PREDICTOR VARIABLES

The set of predictor variables included three different experimental psychological tests, one of which was scored according to two different methods. The description, method of scoring, and interpretation of each of the following instruments can be found in Appendix A.

1. Psychological Distance Questionnaire (PDQ).

2. Assumed Similarity of Opposites (ASO) – Conventional.

3. Assumed Similarity of Opposites (ASO) – Simplified.

4. Life Values Questionnaire (LVQ).

Previous research (Mullins, Vitola, & Abellera, 1973) resulted in an extensive set of variables which appear to differentiate drug abusers from nonabusers. These demographic and aptitude measures will be referred to as background variables and are defined as follows:

5. Race – B (Coded 1 if Black; 0 otherwise).

6. Race – W (Coded 1 if White; 0 otherwise).

7. Race – O (Coded 1 if Other; 0 otherwise).

Each subject indicated the state of his permanent residence prior to entering the Air Force. The various states are collapsed into six geographic areas as follows:

8. Area I, North-Northeast. Maine, New Hampshire, Rhode Island, Vermont, Massachusetts, Connecticut, New York, or New Jersey.

9. Area II, Mid-Atlantic – North Central. Delaware, Pennsylvania, Maryland, Virginia, West Virginia, Kentucky, or Ohio.

10. Area III, South-Southwest. Alabama, Florida, N. Carolina, S. Carolina, Georgia, Tennessee, Mississippi, Arkansas, New Mexico, Oklahoma, Louisiana, or Texas.

11. Area IV, Middle West. Illinois, Indiana, Michigan, Missiouri, Wisconsin, Colorado, Iowa, Kansas, N. Dakota, S. Dakota, Minnesota, Nebraska, or Wyoming.

12. Area V, Far West-Pacific Coast. Arizona, California, Idaho, Oregon, Montana, Washington, Nevada, Utah, Alaska, or Hawaii.

13. Area VI, Other. Areas of permanent residence other than those listed above.

The remaining background variables were:

14. Airman Qualifying Examination (AQE), Mechanical Aptitude Index (M).

15. AQE, Administrative Aptitude Index (A).

16. AQE, General Aptitude Index (G).

17. AQE, Electronic Aptitude Index (E).

18. Armed Forces Qualification Test (AFQT).

19. Education in years at enlistment.

20. Age in years at enlistment.

III. CRITERION VARIABLES

A self-report Background Inventory (BI) was administered to each subject of this study. Criterion data were obtained by referencing items of this inventory which concerned the pre-service use of drugs not prescribed by a physician. There were separate questions concerning the subject's

use of cannabis (including marijuana and hashish), barbiturates, heroin, hallucinogens (including LSD, mescaline, DMT, and STP), stimulants (including benzedrine, dexedrine, and methamphetamines) and miscellaneous drugs (including opium, morphine, cocaine, glue, gasoline and other inhalants). The following criterion variables resulted:

1. *Cannabis Abuse.* The subject indicated how often he had used cannabis, on a scale of "never," "tried it once or twice," "once a month," "once a week," "twice a week" or "daily."

2. *Heroin Abuse.* The subject indicated how often he had used heroin, on the same scale as above.

3. *Barbiturate Abuse.* The subject indicated how often he had used barbiturates, on the same scale as above.

4. *Hallucinogen Abuse.* The subject indicated how often he had used hallucinogens, on the same scale as above.

5. *Stimulant Abuse.* The subject indicated how often he had used stimulants, on the same scale as above.

6. *Miscellaneous Abuse.* The subject indicated how often he had used miscellaneous drugs, on the same scale as above.

7. *Drug Abuse.* If the subject marked "never" for all the drug items, he was assigned a score of "0" on this variable. If he marked at least one of the drug items somewhere between the alternatives "tried it once or twice" and "daily," inclusive, he was assigned a score of "1."

IV. METHOD

The BI, PDQ, ASO, and LVQ were administered to 1,682 randomly selected male basic trainees at Lackland Air Force Base, Texas between 1 June and 31 July 1972. The BI was administered last. Information (the background variables) not gathered during testing was taken from personnel files available on all incoming airmen. Those items of the BI which concern drug abuse involve only pre-service experience with drugs. At the time of data collection, AFR 30-19, which established the disposition of airmen who were identified as pre-service drug abusers, specifically directed that those Air Force applicants with more than four uses of marijuana and/or any history of LSD, dangerous drug or narcotic use would not be accepted for service. However, in some instances waivers were granted for applicants who exceeded these minimums.

The experimental tests and background predictor variables were subjected to a series of multiple linear regression analyses to determine whether or not the tests, independently or in combination, added any significant validity to the basic predictor set, the background variables only. Briefly, this technique involves the computation of an R^2 for a set of predictor variables (the full model), and another R^2 for some subset of these predictor variables (the restricted model). The difference between these two R^2's is then tested for significance. If no significant difference is found between the two R^2's, the interpretation is that those variables in the full model that are not in the restricted model add nothing in predicting the criterion and can be discarded from the predictor set without affecting validity. A more complete description of this technique is available elsewhere (Bottenberg & Ward, 1963).

V. RESULTS AND DISCUSSION

Means and standard deviations for predictor and criterion variables are reported in Table 1. A complete intercorrelation matrix for all predictors and criterion variables is presented in Table 2. Observation of Table 2 will show that neither the PDQ nor the ASO-Conventional resulted in significant validities for any of the drug abuse criteria. The ASO-Simplified, however, did yield a validity for the Miscellaneous Drug Abuse criterion which, though very small, was significant at the .05 level. The LVQ produced the highest validities of all the test variables, reaching the .01 level of significance for the following criteria: Cannabis Abuse, Barbiturate Abuse, Hallucinogen Abuse, Stimulant Abuse, and Drug Abuse.

Results of the regression analysis for the Cannabis Abuse criterion are reported in Table 3. The only psychological test which added significantly to the background variables in the prediction of this criterion was the LVQ. Furthermore, this table indicates that, when given the basic predictor set and LVQ, adding all the other test variables does not improve prediction significantly.

Table 4 presents the results of the regression analysis for the Heroin Abuse criterion. These comparisons indicate that the experimental tests add no significant variance to that already accounted for by the background variables alone. It appears that the use of these tests is not worthwhile in the prediction of the Heroin Abuse criterion.

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Table 1. Means and Standard Deviations of Predictor and Criterion Variables (N=1,682)

	Variable Number	Variables	Mean	SD
Predictor				
	1	PDQ	24.22	7.47
	2	ASO-Conventional	14.49	5.44
	3	ASO-Simplified	2.76	6.40
	4	LVQ	48.51	6.10
	5	Race-B (1 if Black, 0 otherwise)	0.10	0.30
	6	Race-W (1 if White, 0 otherwise)	0.89	0.32
	7	Race-O (1 if Other, 0 if other than the above)	0.02	0.13
	8	Area I, North-Northeast (1 if Area I, 0 otherwise)	0.13	0.33
	9	Area II, Mid Atlantic-North Central (1 if Area II, 0 otherwise)	0.18	0.38
	10	Area III, South-Southwest (1 if Area III, 0 otherwise)	0.27	0.45
	11	Area IV, Middle West (1 if Area IV, 0 otherwise)	0.24	0.43
	12	Area V, Far West-Pacific Coast (1 if Area V, 0 otherwise)	0.18	0.38
	13	Area VI, Other (1 if Area VI, 0 if other than the above)	0.00	0.03
	14	AQE-Mechanical	60.58	20.23
	15	AQE-Administrative	58.05	20.11
	16	AQE-General	63.46	18.23
	17	AQE-Electronic	64.21	20.00
	18	AFQT	61.28	19.88
	19	Education Level	12.03	0.80
	20	Age at Enlistment	18.55	1.36
Criterion				
	21	Cannabis Abuse	0.20	0.70
	22	Heroin Abuse	0.01	0.21
	23	Barbiturate Abuse	0.04	0.29
	24	Hallucinogen Abuse	0.04	0.31
	25	Stimulant Abuse	0.05	0.35
	26	Miscellaneous Abuse	0.19	0.94
	27	Drug Abuse (1 if Drug Abuser, 0 otherwise)	0.15	0.36

Table 2. **Intercorrelation Matrix for Predictors and Criteria (N=1,682)**

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Variable[a,b] No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1		46	17	12	−02	03	−02	02	−02	01	−03	03	−02	06	09	12	12	10	02	03	01	01	−02	02	01	−04	−03
2	-		22	09	00	01	−05	04	−01	−02	−01	01	01	01	07	06	06	06	03	02	02	00	−04	00	−01	−04	00
3	-	-		03	03	−03	−01	01	00	01	00	−01	00	06	05	10	10	08	05	03	−01	01	−02	00	00	−05	−03
4	-	-	-		−09	10	−03	00	−03	−05	06	02	−01	16	22	24	21	22	10	04	−13	−04	−09	−10	−07	−03	−12
5	-	-	-	-		−92	−04	−03	−02	24	−12	−10	−01	−27	−21	−21	−29	−29	00	01	00	01	−01	−01	−03	04	02
6	-	-	-	-	-		−36	05	04	−20	14	00	01	27	20	21	28	28	−02	−07	−02	−01	01	01	01	−04	−03
7	-	-	-	-	-	-		−04	−05	−06	−07	23	00	−05	00	−05	−04	−03	04	15	03	01	02	01	04	00	04
8	-	-	-	-	-	-	-		−18	−23	−21	−18	−01	00	05	04	02	03	−03	−04	00	−01	−02	−03	−01	−01	02
9	-	-	-	-	-	-	-	-		−29	−26	−22	−02	−03	−01	−02	−02	−02	−02	−07	−02	−03	01	02	−01	02	−02
10	-	-	-	-	-	-	-	-	-		−34	−29	−02	−11	−05	−10	−11	−12	−01	07	−01	01	00	−02	−04	−01	−03
11	-	-	-	-	-	-	-	-	-	-		−26	−02	14	05	08	10	07	03	−08	−01	01	−01	02	−02	−01	−01
12	-	-	-	-	-	-	-	-	-	-	-		−02	00	−04	00	01	06	03	11	04	02	02	01	08	02	05
13	-	-	-	-	-	-	-	-	-	-	-	-		02	01	01	02	00	00	−01	−01	00	00	00	00	−01	−01
14	-	-	-	-	-	-	-	-	-	-	-	-	-		36	60	68	62	15	02	−01	−02	−01	01	−01	−01	−03
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-		70	58	46	26	13	−04	−04	−05	−05	−06	−05	−05
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18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11	06	−01	−05	−04	−01	−03	−04	00
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		42	−05	−01	−05	−06	−04	−02	−06
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		−01	−04	−03	−05	−01	−04	−02
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		15	56	57	60	04	66
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		50	45	40	11	17
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		73	76	15	29
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		71	10	29
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		11	31
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		49
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note – See Table 1 for identification of variables; decimal points omitted preceding correlation coefficients.

[a] An r of .05 is significant at the .05 level.

[b] An r of .06 is significant at the .01 level.

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Table 3. **Regression Analysis of Predictors for the Cannabis Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0076	
Full Model 1: Background Variables and LVQ	.0244	.01
Full Model 2: Background Variables and PDQ	.0077	NS
Full Model 3: Background Variables and ASO-Conventional	.0079	NS
Full Model 4: Background Variables and ASO-Simplified	.0078	NS
Restricted Model II: Background Variables and LVQ	.0244	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0255	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

Table 4. **Regression Analysis of Predictors for the Heroin Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0075	
Full Model 1: Background Variables and LVQ	.0082	NS
Full Model 2: Background Variables and PDQ	.0078	NS
Full Model 3: Background Variables and ASO-Conventional	.0076	NS
Full Model 4: Background Variables and ASO-Simplified	.0078	NS
Restricted Model II: Background Variables and LVQ	.0082	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0089	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

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Table 5 presents the results of the analysis for the Barbiturate Abuse criterion. Only the LVQ contributed any significant variance to that accounted for by the background variables alone.

Table 5. **Regression Analysis of Predictors for the Barbiturate Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0077	
Full Model 1: Background Variables and LVQ	.0131	.01
Full Model 2: Background Variables and PDQ	.0080	NS
Full Model 3: Background Variables and ASO-Conventional	.0087	NS
Full Model 4: Background Variables and ASO-Simplified	.0078	NS
Restricted Model II: Background Variables and LVQ	.0131	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0138	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

Table 6 displays the results of the regression analysis for the Hallucinogen Abuse criterion. Again the LVQ was the only test which contributed significantly to the variance accounted for by the background variables.

Table 6. **Regression Analysis of Predictors for the Hallucinogen Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0110	
Full Model 1: Background Variables and LVQ	.0190	.01
Full Model 2: Background Variables and PDQ	.0120	NS
Full Model 3: Background Variables and ASO-Conventional	.0111	NS
Full Model 4: Background Variables and ASO-Simplified	.0110	NS
Restricted Model II: Background Variables and LVQ	.0190	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0206	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

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The results of the analysis for the Stimulant Abuse criterion are reported in Table 7. The LVQ was the only test which added significant variance to the prediction of this criterion.

Table 7. **Regression Analysis of Predictors for the Stimulant Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6), AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0133	
Full Model 1: Background Variables and LVQ	.0163	.05
Full Model 2: Background Variables and PDQ	.0136	NS
Full Model 3: Background Variables and ASO-Conventional	.0133	NS
Full Model 4: Background Variables and ASO-Simplified	.0134	NS
Restricted Model II: Background Variables and LVQ	.0163	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0171	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

Table 8 presents the regression analysis results for the Miscellaneous Abuse criterion. For each comparison, no significant difference was obtained between the R^2 of the full and restricted model. The prediction of the criterion, Miscellaneous Drug Abuse, does not appear to be increased by the use of any of these experimental test variables.

Table 8. **Regression Analysis of Predictors for the Miscellaneous Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0078	
Full Model 1: Background Variables and LVQ	.0081	NS
Full Model 2: Background Variables and PDQ	.0090	NS
Full Model 3: Background Variables and ASO-Conventional	.0092	NS
Full Model 4: Background Variables and ASO-Simplified	.0101	NS
Restricted Model II: Background Variables and LVQ	.0081	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0112	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

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Table 9 presents the results of the analysis for the Drug Abuse criterion. The LVQ was the only test to contribute significantly to the background variables in the prediction of this criterion.

Table 9. **Regression Analysis of Predictors for the Drug Abuse Criterion (N=1,682)**

Predictors	R^2	Significance Level[a,b]
Restricted Model I: Background Variables Only (Race (3); Geographic Area (6); AQE-M,A,G,E; AFQT; Education Level and Age at Enlistment)	.0145	
Full Model 1: Background Variables and LVQ	.0261	.01
Full Model 2: Background Variables and PDQ	.0152	NS
Full Model 3: Background Variables and ASO-Conventional	.0146	NS
Full Model 4: Background Variables and ASO-Simplified	.0152	NS
Restricted Model II: Background Variables and LVQ	.0261	
Full Model 1: Background Variables, LVQ, PDQ, ASO-Conventional and ASO-Simplified	.0277	NS

[a]Significance level of difference between full model and restricted model.

[b]NS=Not significant at either the .05 or .01 level.

With regard to the R^2's presented in Tables 3 through 9, two important considerations should be mentioned. First, due to the preselection of the subjects of this study, there is some restriction of range with regard to the aptitude variables and probably some range restriction on the experimental variables. Second, since it is reasonable to assume that the distribution of drug abuse is skewed in the general population, the criterion variable will be non-normally distributed. Consequently, the validities obtained by this investigation are lower than they would have been if based on a completely unselected, normally distributed sample. In the interest of determining whether or not the LVQ can discriminate between drug abusers and nonabusers, Table 10 was included. Even though the simple validity yielded by the LVQ in predicting the Drug Abuse criterion is modest (r=–.12), the data of Table 10 indicate that this instrument has appreciable success in discriminating between the two criterion groups. Only 42% of the drug abuser group have LVQ scores of 50 or higher as compared to 52% of the nonabusers. Due to the large LVQ score intervals displayed in Table 10, only a gross indication of the discriminating power of this instrument is evident. Furthermore, it is important to establish the point at which the LVQ maximally separates the drug abuser and nonabuser groups. Accordingly, Table 11 which displays the distribution of drug abusers and nonabusers for selected LVQ scores is included. As evidenced by the Difference column in Table 11, and LVQ score of 47 maximally discriminates between the two criterion groups. Only 55% of the drug abusers have scores of 47 or better as compared to 72% of the nonabusers. From these distributions, it is evident that the LVQ is a potentially useful variable in the prediction of drug abuse.

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Table 10. Distribution of Drug Abusers and Nonabusers *vs.* LVQ Score Intervals

LVQ Score Intervals	Nonabusers N	Nonabusers %	Drug Abusers N	Drug Abusers %
60-69	8	1	0	
50-59	730	51	105	42**
40-49	594	41	116	46 NS[a]
30-39	84	6	28	11**
20-29	8	1	3	1 NS
10-19	5		1	
0-9	0		0	
	N=1,429		N=253	

[a]Difference not significant at either the .01 or .05 level.

**Difference significant at .01 level.

Table 11. Distribution of Drug Users and Nonusers *vs.* Selected LVQ Scores

LVQ Scores	Nonusers %	Drug Users %	Difference[a] %
50 and above	52	42**	10
49 and above	59	46**	13
48 and above	66	50**	16
47 and above	72	55**	17
46 and above	78	63**	15
45 and above	82	71**	11
44 and below	18	29**	−11
	N=1,429	N=253	

[a]The percentages displayed in this column are the differences between the nonabuser and drug abuser groups above or below selected LVQ scores.

**Significant at the .01 level.

VI. CONCLUSIONS

Three experimental psychological tests were investigated to determine if they added significantly to the prediction of eight drug abuse criteria when combined with a basic predictor set consisting of background variables only. Of the four tests investigated, only one, the Life Values Questionnaire appeared to add any significant unique variance to prediction when combined with the background variables. In addition, the inclusion of the LVQ with this basic predictor set resulted in significant multiple validities for all the criterion variables except Heroin, Barbiturate and Miscellaneous Abuse. Even though the LVQ does not by itself yield high validities for any of the eight drug abuse criteria, it does have considerable success in discriminating between drug abusers and nonabusers.

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Appendix A: DESCRIPTION OF EXPERIMENTAL TEST VARIABLES

Psychological Distance Questionnaire (PDQ). This instrument measures interpersonal perception by requiring subjects to respond to various items describing their "most preferred coworker" (MPC) and their "least preferred coworker" (LPC). the PDQ follows the form of Osgood's semantic differential with LPC and MPC scale sheets containing 37 bipolar adjective items (e.g., Friendly – Unfriendly, Stubborn – Not Stubborn). The same set of adjectives is used to describe both the MPC and LPC. Each item alternative is assigned a weight ranging from eight at the most favorable pole to one at the least favorable pole. A D-score is produced by computing the difference between weights of corresponding items for the LPC and MPC scales, and then by squaring these differences and summing the squares. The square root of the sum of squares is defined as the D-score and indicates the difference perceived between the subject's LPC and MPC. Fiedler (1958) interprets the D-score as psychological distance; that is, a tendency to become emotionally involved with others as compared to a more reserved, self-sufficient attitude.

Assumed Similarity of Opposites Test (ASO). This measuring instrument is almost identical to the PDQ in terms of design and interpretation. Differences between the two are minor. The ASO consists of 40 statements which are initially responded to in terms of the MPC and then in terms of the LPC. The alternative format is a six-point equal internal scale ranging from "Definitely True" with a corresponding weight of six to "Definitely Untrue" with a corresponding weight of one. Two different scoring procedures were employed with resulting scores termed ASO-Conventional and ASO-Simplified. The ASO-Conventional score was computed by the same scoring method that was used to produce the PDQ D-score. Computation of the ASO-Simplified score was very direct. A score of one was awarded for each item with "Definitely True," "Generally True," or "Tends to be True" as the chosen alternative; no points were awarded otherwise. The item scores were then summed separately for the LPC and the MPC scales. The difference between the summed item scores for the two scales is the ASO-Simplified score.

Life Values Questionnaire (LVQ). A 67-item, self-report questionnaire was constructed on the basis of seven principles of meaning suggested by Kotchen (1960). These seven principles are considered to be essential aspects of mental health; defined as "the achievement of a sufficient store of meaning to enable one to master suffering and to direct daily life." Abbreviated definitions of these components of mental health are provided below:

Uniqueness. Uniqueness is the realization by the individual that he is a unique being and that each situation he encounters and his relation to it are unique.

Responsibility. Responsibility is the use of freedom; it requires the capacity to get along with destiny where necessary and to shape it where possible.

Self-affirmation. The concept of self-affirmation implies an awareness and an affirmation of one's own existence. This particular principle has two parts; self-affirmation as an individual and self-affirmation as a part of the larger community of mankind (Tillich, 1953).

Courage. Courage is the act of the individual in accepting the anxiety of death and affirming oneself as part of the embracing whole of mankind or as an individual (Tillich, 1953).

Transcendence. Transcendence is the capacity to transcent the immediate boundaries of time (May, 1959). To be rigidly confined to a specific world in time detracts from the meaningfulness of one's existence and can be the basis for various forms of mental disorder.

Faith-commitment. Faith is the belief in the validity and attainability of some goal or value set by one's own intentions (Allport, 1950). Although faith-commitment includes religious faith, it is not limited to religious faith alone.

World view. World view is the life space within which the individual exists. May (1959) postulates three modes of the world: the "Umwelt," or natural biological world; the "Mitwelt," or world of relationships among human beings; and the "Eigenwelt," the world uniquely present for each individual and

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the basis for seeing the real world in its perspective (May, 1959). The ability to "live" in these three worlds simultaneously is at the very core of mental health.

As suggested by Kotchen (1960), the total score is of central interest rather than the scores for each component. The components are not independent but rather coalesce to form the total gestalt of mental health. The alternatives for each item were "strongly agree," "agree," "disagree," and "strongly disagree." To facilitate scoring, alternatives were collapsed so that "strongly agree" or "agree" were considered as positive responses and "disagree" or "strongly disagree" were considered as negative responses. A score of one (1) was given for a response indicating the presence of a component for a particular item and score of zero (0) was given for a response indicating the absence of a component for a particular item. The total score was derived by summing the item scores.